

Recovery Plan Action Status**Plan Name: Tar River Spiny mussel****Plan Status: Final Revision 1****Plan Date: 05-May-92****Lead Agency: USFWS****Lead Office: Asheville Ecological Services Field Office****(828)****258-3939)**

Species	Action Priority #	Action #	Action Description	Action Status	Est. Initiation Date	Est. Completion Date	Responsible Parties	Work Type	Labor Type	Action Comments
Tar River spiny mussel (Elliptio steinstansana)	1	1	Utilize existing legislation and regulations to protect species and its habitat	Ongoing Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Law Enforcement Division, U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, North Carolina Wildlife Resources Commission, U.S. Fish and Wildlife enhancement, USFWS Regional Office 4, North Carolina Department of Environmental Management	Other: Regulations	Internal Field Assistance, Internal Technical Assistance	This task is continuous and will be necessary and cannot be completed until species is recovered/delisted

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Tar River spiny mussel (Elliptio steinstansana)	2	10	Conduct research necessary for species management and recovery; i.e. habitat requirements, biology, and threat analysis	Ongoing Current	Prior to FY 1995		North Carolina Wildlife Resources Commission, U.S. Fish and Wildlife enhancement, North Carolina Natural Heritage Program, USFWS Regional Office 4	Research: Competition, Research: Demographic Studies, Research: Disease, Research: Environmental Contaminants, Research: Habitat Requirements, Research: Habitat Status, Research: Other Information, Research: Population Surveys, Research: Predation	Contract, Internal Field Assistance, Internal Technical Assistance, Species Expert	1988-1991: Habitat requirements, distribution, and threat analysis studies, conducted; 2007 - initiated on-going life history/reproduction , holding and propagation studies; fish host studies initiated and completed 2008 -- efforts to artificially propagate species for population augmentation/reintroduction efforts and other life history studies on-going; 2010 initiated threat analysis of Fishing Creek and surveys for augmentation sites and initiated a four-year project to inventory nonpoint source pollution concerns and assess toxicity of wastewater treatment plant effluents discharged to the Tar River spiny mussels current and historic habitat. submitted a proposal for environmental contaminant investigation funds (FY09) to assess point source and nonpoint source pollution loads (in cooperation with USGS) to important occupied and historic Tar spiny mussel habitat.

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Tar River spiny mussel (Elliptio steinstansana)	1	11	Based on biological and threat analysis, investigate need for management and implement where needed.	Ongoing Current	Prior to FY 1995		U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, North Carolina Wildlife Resources Commission, Soil Conservation Service, U.S. Fish and Wildlife enhancement, North Carolina Natural Heritage Program, USFWS Regional Office 4, North Carolina Department of Environmental Management	Management: General, Management: Habitat Maintenance and Manipulation, Management: Land Use, Management: Other, Management: Planning, Other: Information and Education	Internal Field Assistance, Internal Technical Assistance, Species Expert	Priority 1, 2, or 3, depending on result of 2.1, 2.2, and 2.3; task was initiated following listing of the species and will be continuous and necessary until the species has been recovered.
Tar River spiny mussel (Elliptio steinstansana)	2	12	Determine number of individuals required to maintain viable population	Not Started			Contract, U.S. Fish and Wildlife enhancement, USFWS Regional Office 4	Work type not yet selected	Contract, Graduate Student, Internal Field Assistance, Internal Technical Assistance	
Tar River spiny mussel (Elliptio steinstansana)	2	13	Search for additional populations and suitable habitat	Ongoing Current	Prior to FY 1995		North Carolina Wildlife Resources Commission, Contract, U.S. Fish and Wildlife enhancement, USFWS Regional Office 4	Research: Population Surveys	Contract, Internal Field Assistance, Internal Technical Assistance, Species Expert	surveys for additional populations are conducted periodically as funding and personnel availability allow

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Tar River spinymussel (Elliptio steinstansana)	2	14	Develop techniques, select sites, reintroduce the species back into historic habitat, and evaluate and protect any populations established	Ongoing Current	FY 2007		North Carolina Wildlife Resources Commission, Contract , U.S. Fish and Wildlife enhancement, USFWS Regional Office 4	Work type not yet selected	Contract, Internal Field Assistance, Internal Technical Assistance, Species Expert	reproductive studies initiated (fish host studies completed 2008); 2008 initiated study of the need for and sites for potential augmentation of the Fishing Creek portion of the species population in the Tar River system; NCWRC and NC State University in cooperation with the Service are holding and conducting controlled propagation of rescued individuals from 3 populations (because of exceptional drought conditions); 2008 provided funding to NCWRC to expand the capacity for rescue, holding, life history, and controlled propagation for population augmentations/reintroductions. 2009 continued surveys and life history and propagation studies; 2010 - obtained funding for developing in-vitro culture capabilities to try and improve juvenile production.

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Tar River spinymussel (Elliptio steinstansana)	1	2	Work with appropriate Federal and State agencies to identify actions that could negatively affect the species and incorporate protective measures into such actions	Ongoing Current	Prior to FY 1995		U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, North Carolina Wildlife Resources Commission, Soil Conservation Service , U.S. Fish and Wildlife enhancement, North Carolina Natural Heritage Program, USFWS Regional Office 4, North Carolina Department of Environmental Management	Management: Land Use, Management: Planning, Other: Regulations, Research: Demographic Studies, Research: Habitat Status, Research: Other Information, Research: Population Surveys	Contract, Internal Field Assistance, Internal Technical Assistance, Species Expert	Task was initiated following listing of the species and will be continuous and necessary until the species has been recovered. A technical support was submitted to the NCDWQ to assist in development of a site-specific management plan for the Tar basin (2005); continue ot work with NCDWQ to implement a protective plan.
Tar River spinymussel (Elliptio steinstansana)	2	3	Meet with local governmental officials and business interests and elicit their support for recovery	Ongoing Current	Prior to FY 1995		U.S. Environmental Protection Agency, The Nature Conservancy, U.S. Army Corps of Engineers, North Carolina Wildlife Resources Commission, Soil Conservation Service , U.S. Fish and Wildlife enhancement, North Carolina Natural Heritage Program, USFWS Regional Office 4, North Carolina Department of Environmental Management	Work type not yet selected	Labor type not yet selected	This task will be continuous and on-going until species is delisted. Local government and other support was obtained through outreach efforts and helped in obtaining ORW for part of Swift Creek

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Tar River spiny mussel (Elliptio steinstansana)	2	4	Develop information and education program and present	Ongoing Current	Prior to FY 1995		The Nature Conservancy, North Carolina Wildlife Resources Commission, U.S. Fish and Wildlife enhancement, North Carolina Natural Heritage Program, USFWS Regional Office 4	Work type not yet selected	Labor type not yet selected	Task duration: 1 year to develop, then continuous. Worked with NCWRC and NC State Museum to develop and publish a NC mussel workbook and key; worked with several partners to develop a guide to assist local governments, landowners, and other in planning and implementing development and other land use activities while protecting sensitive aquatic resources.
Tar River spiny mussel (Elliptio steinstansana)	2	5	Develop and utilize cryopreservation techniques	Not Started			Contract, U.S. Fish and Wildlife enhancement, USFWS Regional Office 4	Work type not yet selected	Labor type not yet selected	
Tar River spiny mussel (Elliptio steinstansana)	2	6	Develop and implement a monitoring program	Ongoing Current	Prior to FY 1995		North Carolina Wildlife Resources Commission, U.S. Fish and Wildlife enhancement, North Carolina Natural Heritage Program, USFWS Regional Office 4	Research: Habitat Status, Research: Population Surveys	Contract, Internal Field Assistance, Internal Technical Assistance	Biennial Latest monitoring surveys completed 2010.
Tar River spiny mussel (Elliptio steinstansana)	3	7	Annually assess recovery program and modify program and plan where required	Ongoing Current	FY 1995 - FY 1999		North Carolina Wildlife Resources Commission, U.S. Fish and Wildlife enhancement, North Carolina Natural Heritage Program, USFWS Regional Office 4	Work type not yet selected	Labor type not yet selected	Conducted yearly.

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Tar River spinymussel (Elliptio steinstansana)	1	8	Encourage establishment of mussel sanctuaries, high quality resource water designations, and other protective strategies as a means of protecting present and reintroduced populations	Partially Complete	FY 1995 - FY 1999		U.S. Environmental Protection Agency, The Nature Conservancy, U.S. Army Corps of Engineers, North Carolina Wildlife Resources Commission, Soil Conservation Service , U.S. Fish and Wildlife enhancement, North Carolina Natural Heritage Program, USFWS Regional Office 4, North Carolina Department of Environmental Management	Management: Habitat Maintenance and Manipulation, Management: Land Use, Management: Planning, Other: Information and Education, Other: Regulations	Internal Field Assistance, Internal Technical Assistance, Species Expert	initiated efforts to obtain ORW designation of Swift Creek -- portion of the stream was designated ORW in 2003; current efforts and outreach are on-going to garner support for expansion of this designation into more of Swift Creek and other areas supporting populations of the species; also working with NCDWQ to develop and implement a Site-Specific Water Quality Mgmt Plan for the spinymussel in the Tar River system; 2009-2010 - working with numerous partners, initiated efforts to identify and protect streams/stream reaches upon which to focus conservation and to serve as "santuaries" for the species.
Tar River spinymussel (Elliptio steinstansana)	2	9	Consider use of land acquisition to protect the species	Ongoing Current	FY 1995 - FY 1999		The Nature Conservancy, North Carolina Wildlife Resources Commission, U.S. Fish and Wildlife enhancement, North Carolina Natural Heritage Program, USFWS Regional Office 4	Acquisition: Easement, Acquisition: Fee Title, Acquisition: Management Agreement, Management: Habitat Maintenance and Manipulation, Management: Land Use, Other: Information and Education	Labor type not yet selected	1998, entered into agreement (MOU) with major land owner (timber company) in upper Tar River watershed (Tar River and Swift, Little Fishing, Shocco Creek watersheds) for preservation of stream buffers; on-going efforts with TNC and conservation groups and agencies to acquire easements along streams supporting the species.